

5 Speed Bus Installation Kit Parts Checklist

1. Transmission Mount
2. Shift Selector Shaft
3. Rear Shift Rod (In shipping tube)
4. Front Shift Rod (In shipping tube)
5. Relay Cup (with set-up shim in the bag with it)
6. Shift Lever (In shipping tube)
7. Shift Gate Box
8. Slave Cylinder
9. Hydraulic Line

Hello Richard,

Here is a checklist of the basic sub-assemblies of the 5MT installation kit.

Let me know what you think of the kit, and of course, let me know if you have any questions about anything.

Thank you for purchasing a 5 Speed Bus Conversion kit!

Best regards,

Dave Clymer

daclymer1@gmail.com

425 577-9997

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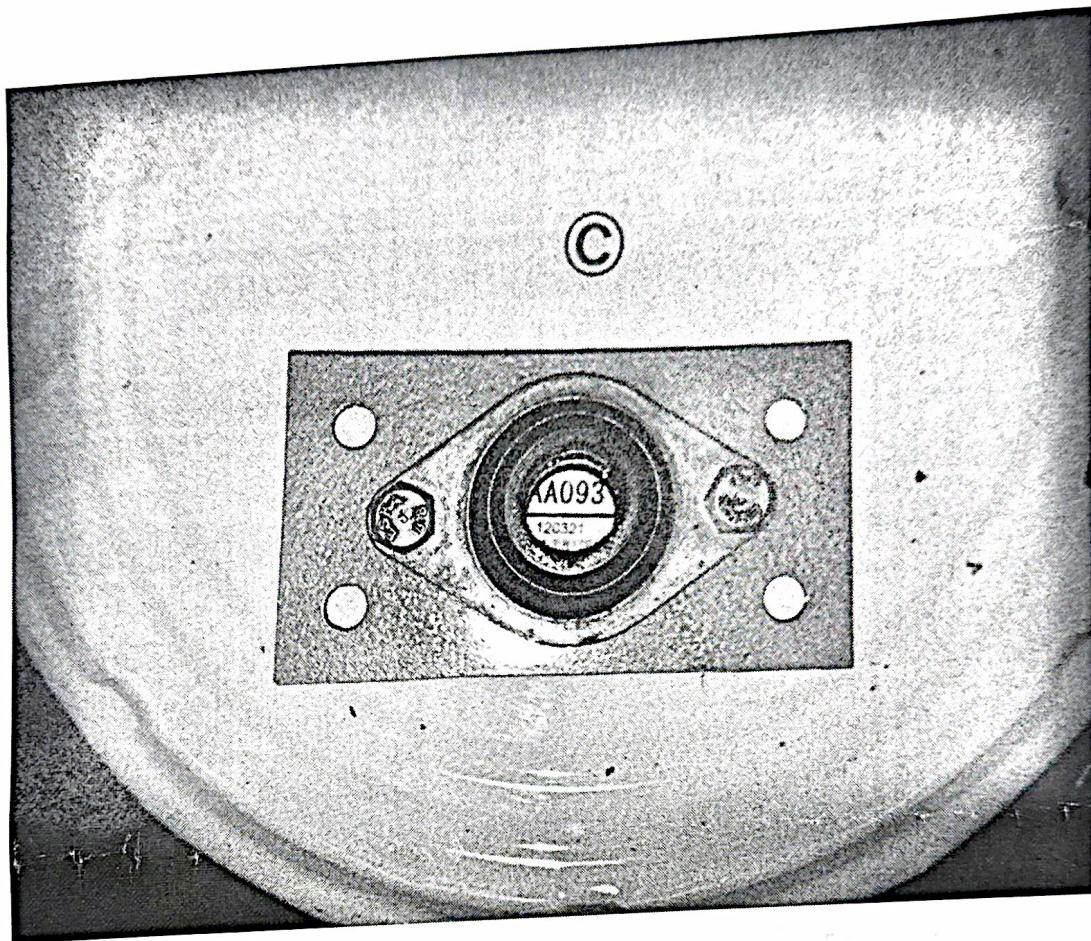
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FRONT BUSHING PLATE



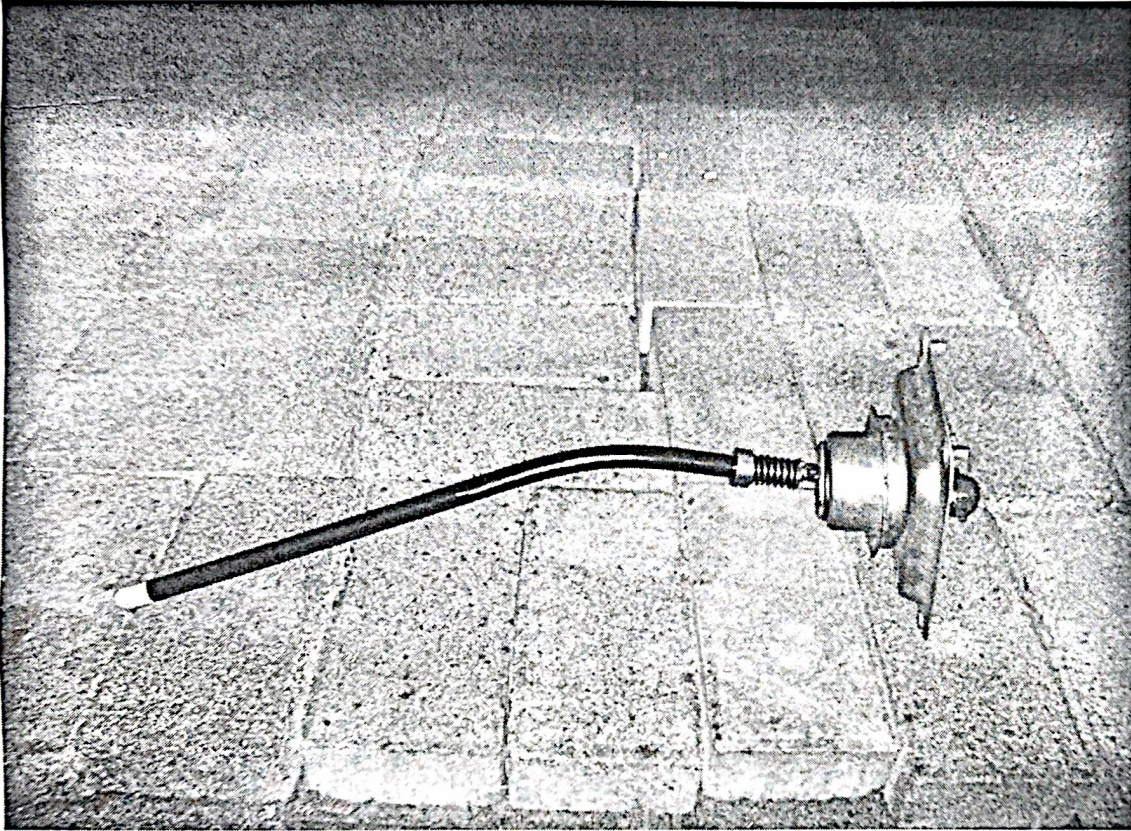
The shift linkage bushing retainers originally used on the rear linkage rod at the VW transmission need to be saved and re-used on the bushing plate that bolts to the conversion kit shift box and supports the front of the long shift linkage rod.

I recommend using brand new oem style shift linkage bushings. I like them because they are designed to retain grease inside the bore and they provide isolation from mechanical vibrations. Also, the shift linkage rods that come in the kit are slightly larger in diameter due to the powder coat finish. The flexible oem bushings allow for the slightly larger OD. The Delrin bushings that are available are not a good match for this reason.

The 8mm x 1.0 bolts that attach the retainers should be torqued down to 8 ft/lbs.

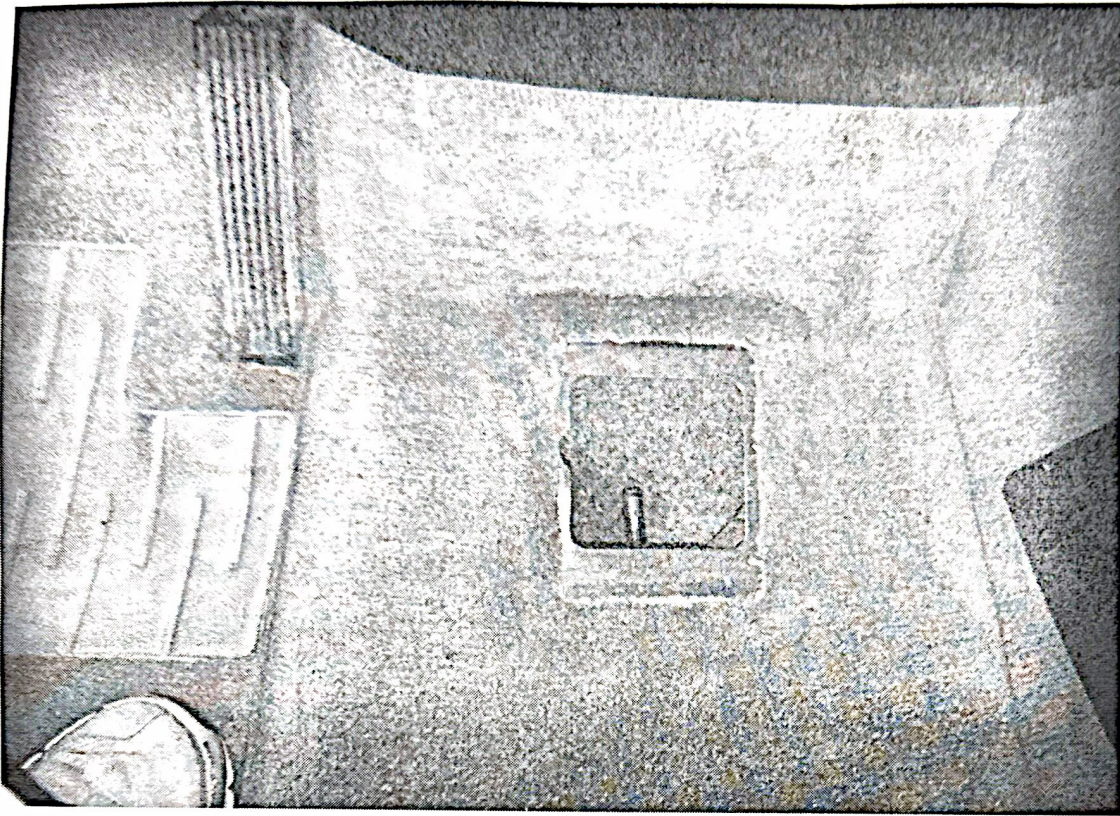
Installing the Shift Lever

The shift lever comes with the relay ball and pin already fitted. As delivered, it is ready for installation into the original Vanagon pivot bearing and floor plate assembly. It installs exactly like the original and both the set screw collar and reverse lockout spring are re-used. Here is a photo that shows the 5 Speed Bus shift lever installed in the original pivot bearing assembly.

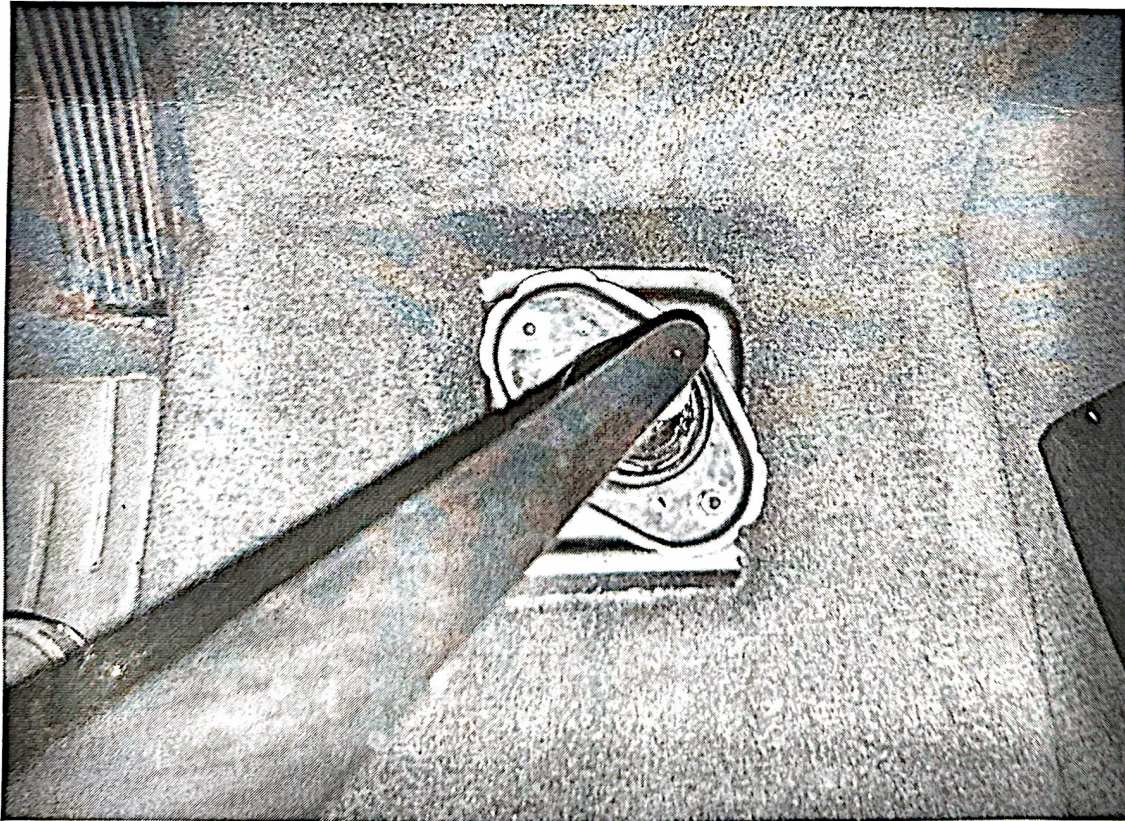


The reverse lockout spring is no longer used with the conversion as there is no need to push the shift lever down, but I've retained it because it provides a nice rattle free assembly. If your shifter pivot bearing is worn-out (sloppy) or cracked from abuse, you should replace the parts. Most of bearings I come across are still in good shape, though, so unless you detect a fault with any of the parts, you can save some money here. Put some lithium grease on the relay ball prior to installing the assembly in the van.

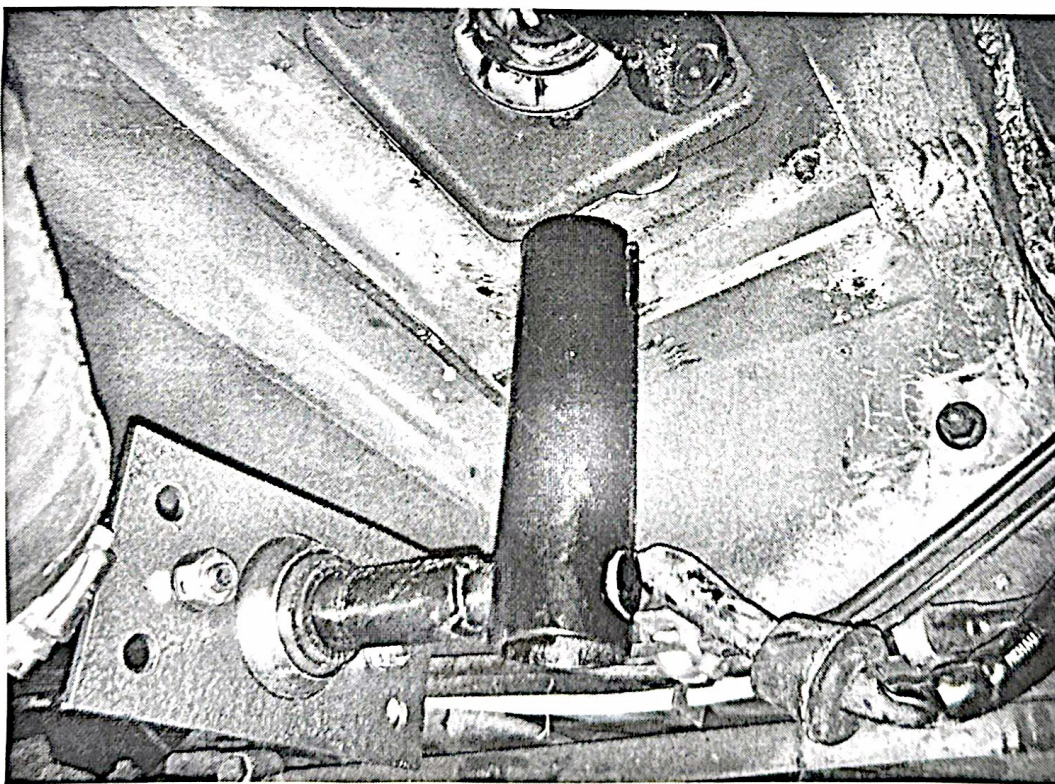
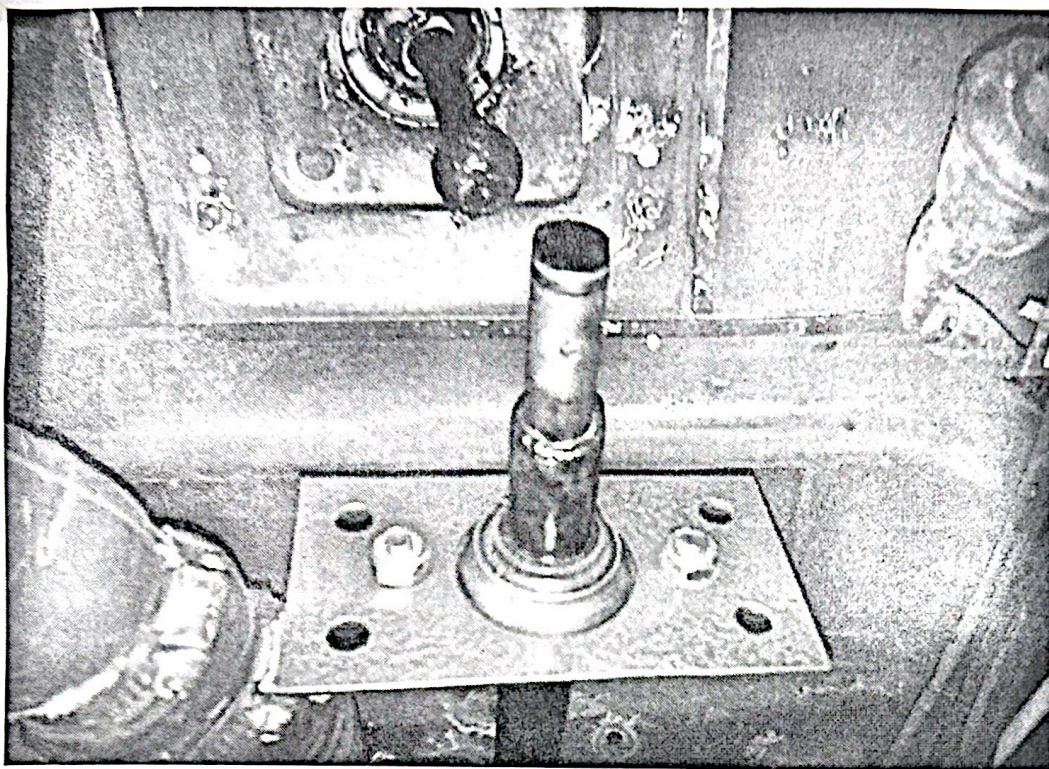
The next step is to install the shifter assembly in the van. It mounts to the floor with the rectangular mount plate oriented so the widest portion is from side to side.



It's a little bit of a chore to get the assembly down below the carpet and insulation pad, but it does fit.

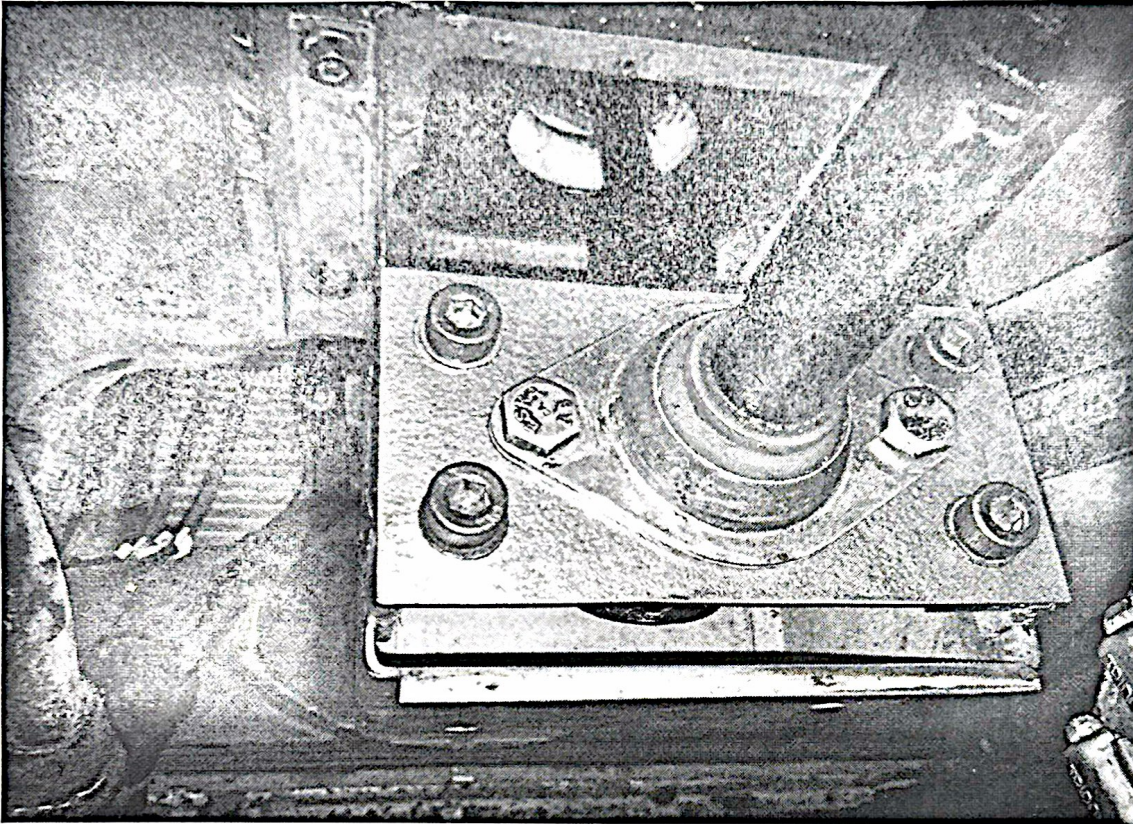


From down below, mount your shifter cup and front shift bushing plate onto the end of the front shift rod.



Make sure the M6 bolt for the shifter cup is nice and snug. You can use blue Loctite for extra security, but I haven't found it necessary so far.

The next step is to install the shifter guide box. With the cup pushed onto the ball and the locating pin properly inserted into the slots in the cup, push the box up from below.



The final step is to bolt the front bushing plate to the shifter box with the four M6 bolts provided.

Adjusting the shifter with the setup shim will be covered in the next section.

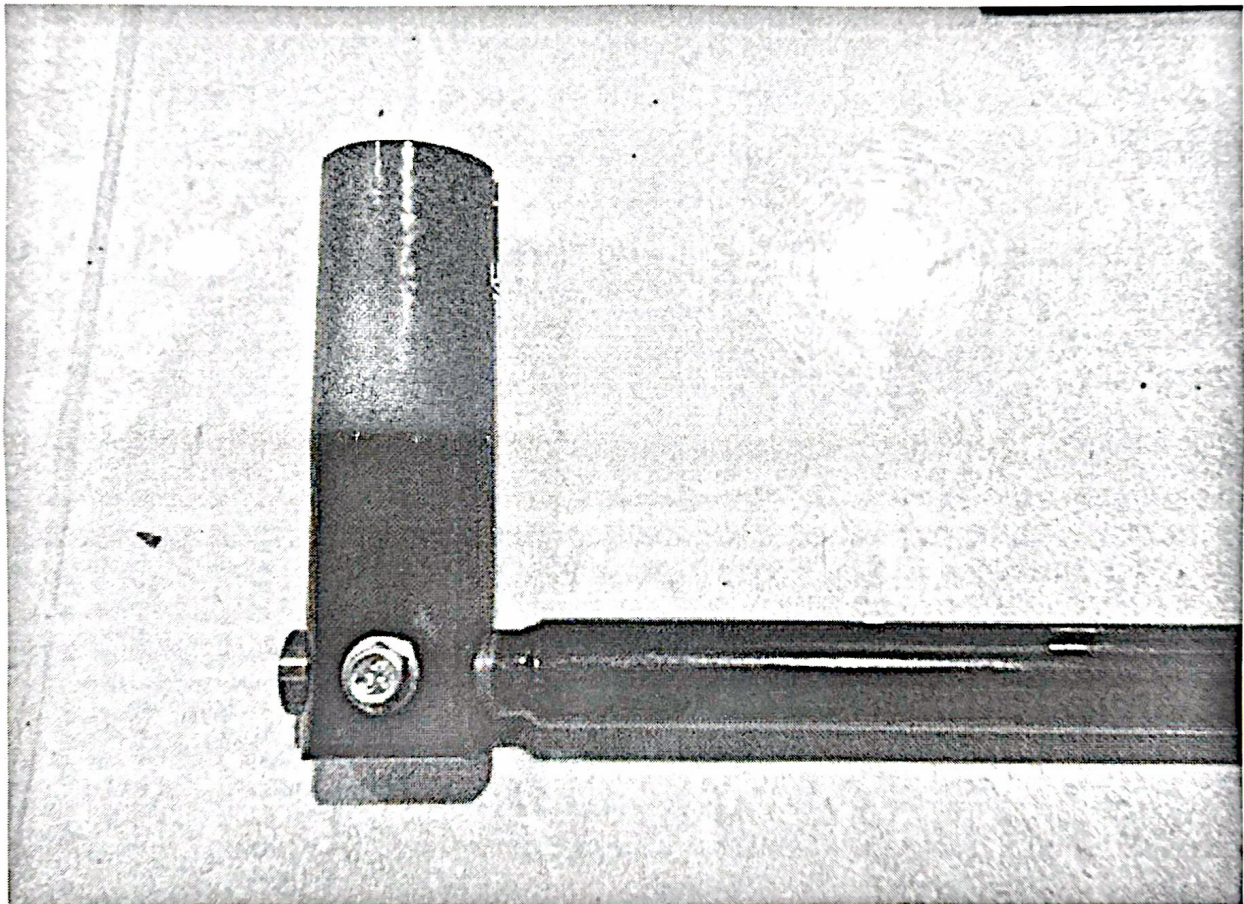
Note: These photos show the installation of the original prototype parts set and are meant to illustrate the basic concepts. There are some differences between the parts shown, and the parts supplied in your kit.

ATTACHING THE FRONT SHIFT RELAY CUP

It's very important to have zero slack in the rotation of the shifter and shift linkage. The length of the Vanagon shift lever amplifies any slack and makes a tiny amount into a noticeable amount. At the rear universal joint attachment, a roll pin is used to accomplish this zero clearance attachment.

This would do the trick at the front, also. However, it is very hard to line up the relay cup, brace it against something, and pound in a roll pin while lying under the van.

As a result, I've come up with this attachment method for the front relay cup:



It's not through-bolted. Instead, the linkage rod is threaded for a flanged M6x1.0 bolt. The flanged head clamps the relay cup tightly against the side of the linkage rod and holds it completely rigidly.

It is a good idea to install the bolt with a small drop of blue Loctite. I've had good luck with the bolt holding up without Loctite, but Loctite is good assurance that the bolt isn't going to rattle out on a dirt in the middle of no where. And with blue Loctite, a bolt can still be removed with a wrench, so there should be no problems removing the bolt wherever or whenever.

Rear Shift Linkage Rod

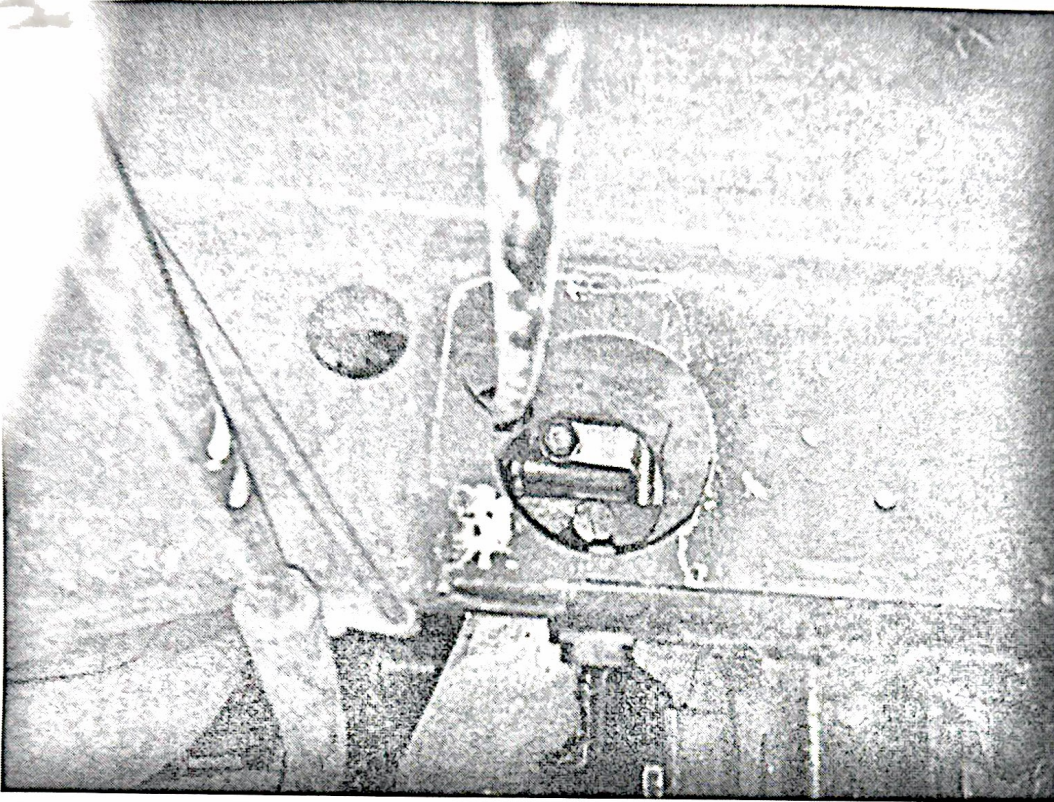


The rear shift linkage rod comes with the special universal joint already installed. You should periodically squirt a few drops of oil into yolk portion of the joint. Also, make sure the rubber boot is in place and in good shape. The joint will last forever if you keep it lubricated and keep grit out of it.

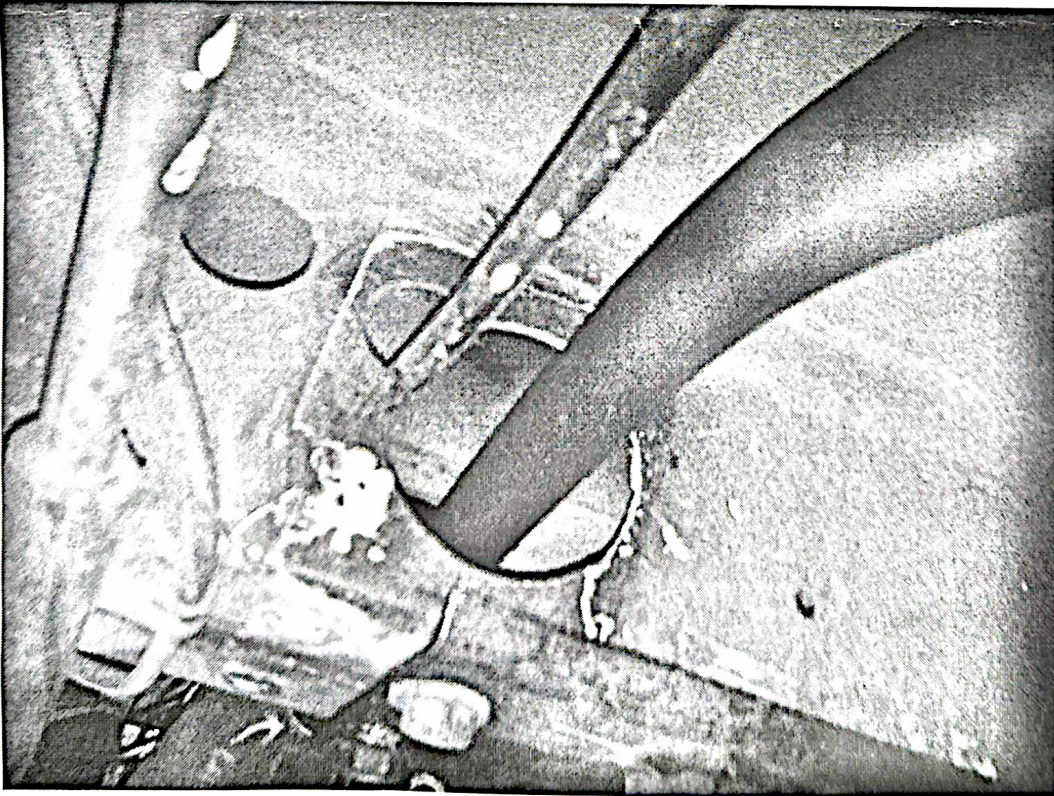
The center universal joint/adjustment collar needs to be saved from your original rear shift linkage rod. The plastic portion of this assembly is readily available right now, and very affordable, so you might consider replacing it. On the other hand, I have found these to be a very low wear part, so you could probably get away with just cleaning the original up and lubricating the retaining pins.

Make sure the nut and bolt turn freely on the adjustment collar. This is where you will make your shifter adjustment after the whole installation is complete.

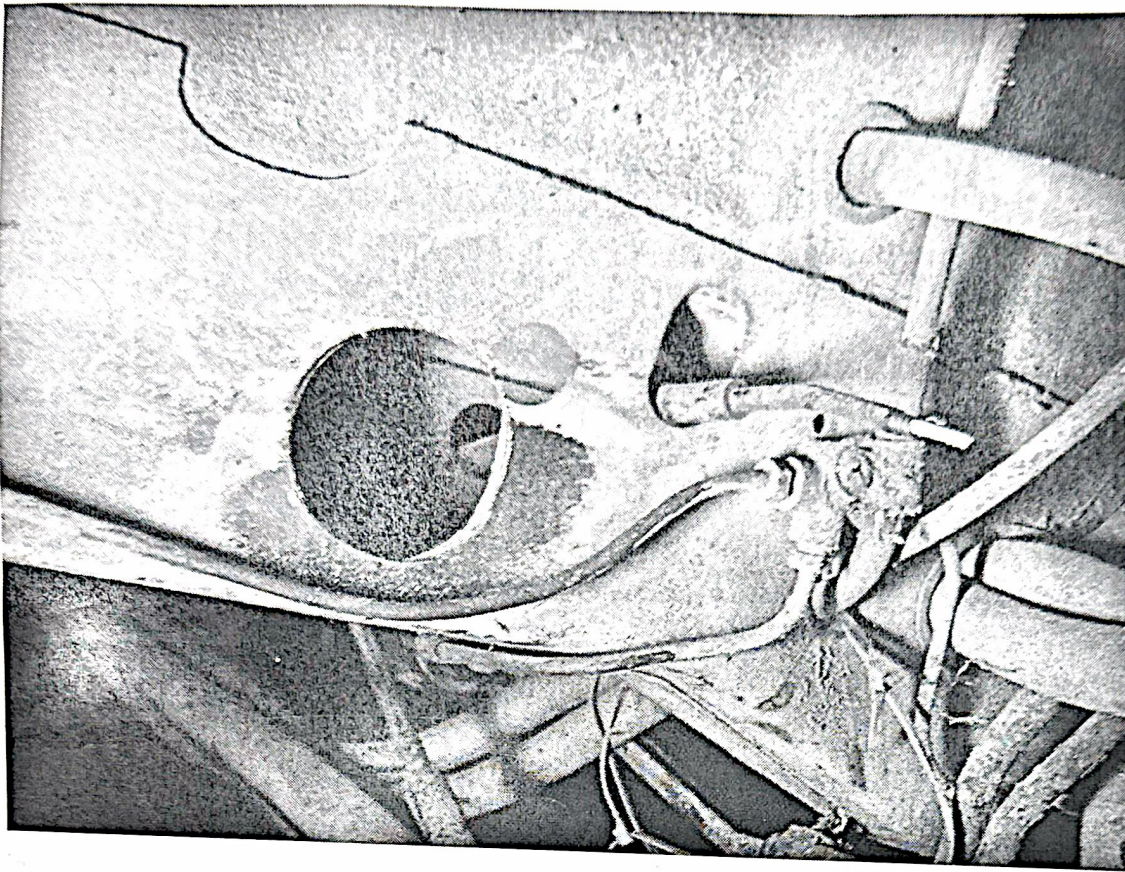
CUTTING THE HOLE FOR THE SHIFT LINKAGE



Hole for shift linkage rod. View from front.



Front view with linkage rod installed. Note the mounting holes used for bolting up the transmission mount.



View from the rear. This hole is a bit harder to cut with the hole-saw because the surface is curved and there is an additional thickness of steel towards the bottom. Take your time. Lubricate the hole saw.

Measuring for the holes:

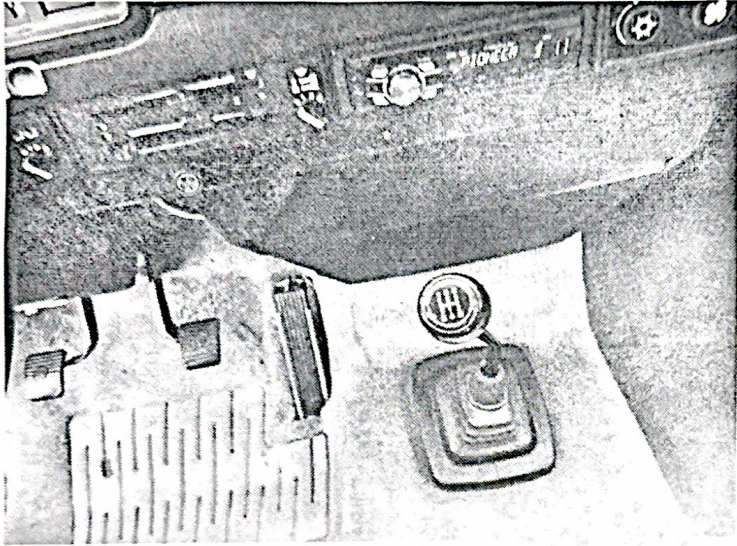
The hole is aligned with the second set of threaded holes (closer to the driver's side) for the transmission mount. Draw a line straight up from the centerline of that row of holes. The pilot hole for the hole saw should be located 1.75" up from the lower corner of the transverse beam. I used a 2 1/8" hole saw for this. The front side cuts quickly and easily. The back side facing the engine is more of a chore. There are several layers of steel on that side and the surface isn't perfectly flat.

Let me know if you have any questions about which holes to reference from.

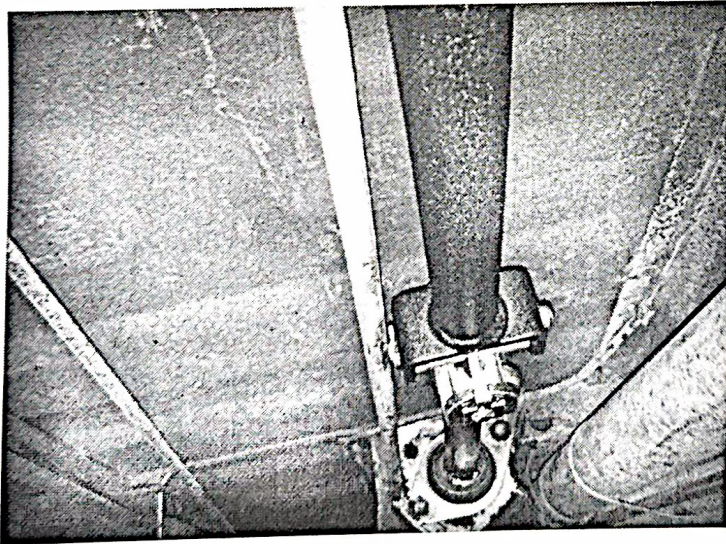
David

ADJUSTING THE SHIFTER

1. Place the transmission in neutral.

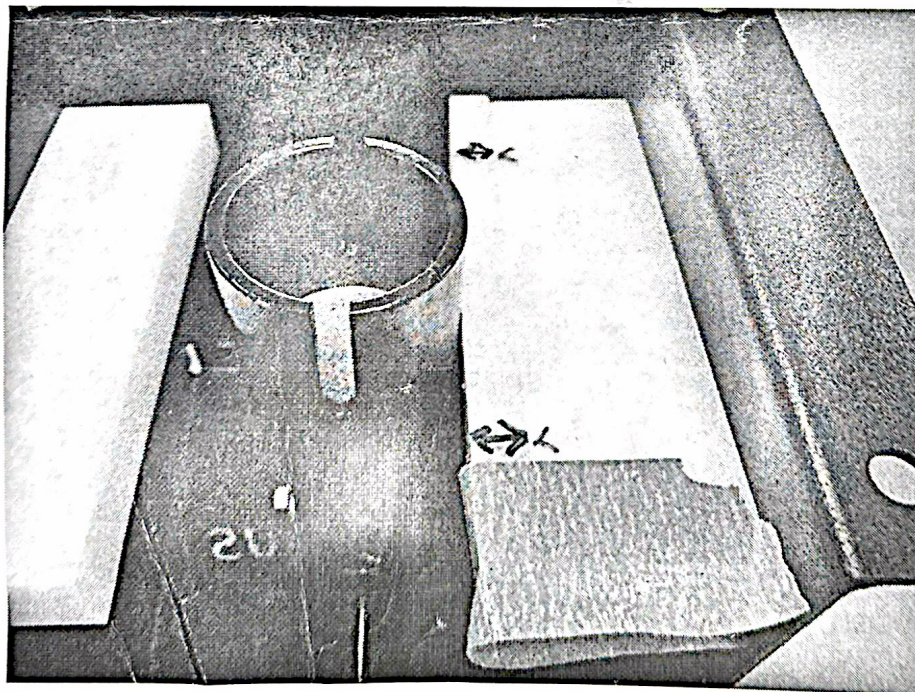
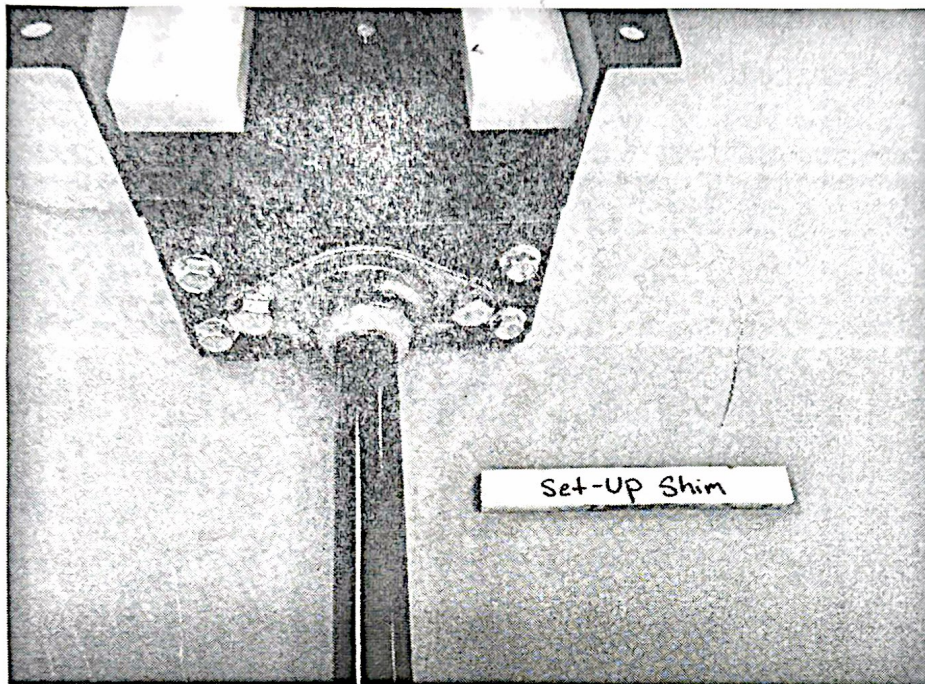


2. Loosen the clamp on the center universal joint.

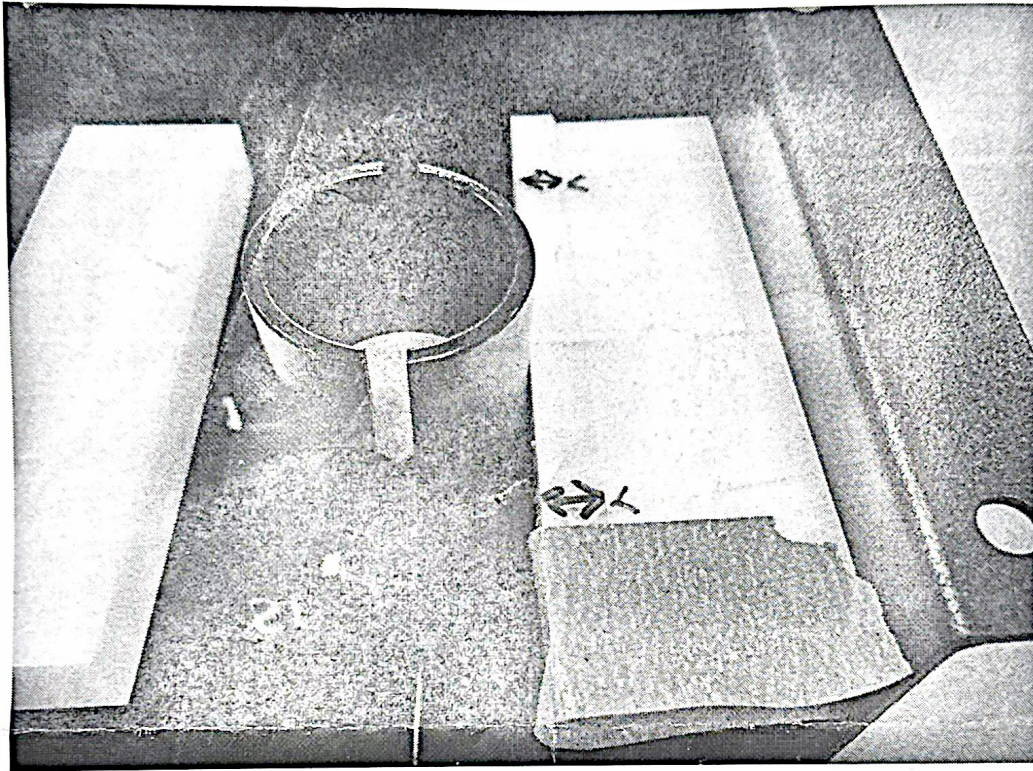


3. With the clamp loosened, move the shifter from side to side to make sure the loosened joint rotates freely and without hanging up.

4. Place the 8mm adjustment shim between the right (passenger side) face of the black relay cup and the contact surface of the right side Delrin guide rail. Hold the shim against the contact surface with a piece of tape.



5. Pull the shift lever towards the driver's seat (pinching the shim between relay cup and guide rail). While holding the lever towards the driver's seat, have someone go under the van and tighten the clamp at the center universal joint.



6. After this procedure is complete, with the shifter in neutral, there will be an 8mm gap between the side of the relay cup and the right side Delrin guide rail. This is just enough space to allow the shift linkage to rotate the transmission selector rod into the 1st and 2nd gear plain. The guide rails are properly sized so the same thing happens in the 5th and reverse plain once the initial setup is made.

